REMARKS

By this amendment, claims 18 and 27 have been amended for clarification and to more clearly articulate the novel and non-obvious embodiments of the present application. The amendments herein are fully supported by the original specification and drawings; therefore, no new matter is introduced. Claims 18-35 remain in the application. This application has been carefully considered in connection with the Examiner's Action. Reconsideration and allowance of the application are respectfully requested.

Rejection under 35 U.S.C. §103

Claims 18-35 were rejected under 35 U.S.C. §103(a) as being unpatentable over Strommer et al. (Pub. No. 2005/0033149, hereinafter "**Strommer**") in view of Shaknovich (Pat. No. 5,807,398, hereinafter "**Shaknovich**"), Hofland et al. (Pat. No. 5,800,354, hereinafter "**Hofland**"), and Kundu et al. (Knowledge-based ECG interpretation: a critical review, 2000, Pattern Recognition, 33, 351-373, hereinafter "**Kundu**") . With respect to claim 18, applicant respectfully traverses this rejection on the grounds that the **Strommer**, **Shaknovich**, **Hofland** and **Kundu** references are defective in establishing a *prima facie* case of obviousness.

Independent claim 18, as now presented, more clearly recites, inter alia, the specific feature limitation of "an intervention device that comprises **(i)** *catheters* having a plurality of detectable markers ... being positioned in a substantially evenly distributed manner *within a volume* of the *target organ* ... *to be used* as *features* to perform *motion correction within* the *target organ*, **(ii)** a *displaceable catheter* ... having a *further detectable marker*, and **(iii)** a stereotactic navigation system to position **(iii.a)** the catheters having the detectable markers and **(iii.b)** the displaceable catheter having the further detectable marker *within the target organ* ... [*and*]

a *computing unit* configured to carry out ...

constructing an ***internal*** *motion-corrected target organ-oriented three-*

dimensional coordinate system based on the *detectable markers* [*of the catheters*] within the images being *used as* the *features* on which *to base motion correction* ... [*and*]

generating a *spatial roadmap* representing an *envisaged trajectory* of the *displaceable catheter* within the *motion-corrected target organ-oriented three-dimensional coordinate system by* (i) *interrelating* the *spatial positions* of the *detectable markers* within the *motion-corrected target organ-oriented three-dimensional coordinate system* ... [*and*]

monitoring the spatial position of the *displaceable catheter within* the *motion-corrected target organ-oriented three-dimensional coordinate system* via the *further detectable marker* [*of the displaceable catheter*] ... [and]

determining a *discrepancy* between [*(i)*] the spatial position of the displaceable catheter and [*(ii)*] the spatial roadmap and [*then*] calculating a navigational correction [*in response to the determined discrepancy*] ... and

controlling the navigation system to apply the navigational correction to the position of the *displaceable catheter within* the *motion-corrected target organ-oriented three-dimensional coordinate system*" (emphasis added). In particular, note that in claim 18, the *catheters* having a *plurality of detectable markers* are distinct from the *displaceable catheter* having a *further detectable marker*. In addition, note that the single coordinate system of claim 18 comprises an *internal* motion-corrected *target organ-oriented* three-dimenional coordinate system based on the *detectable markers* [*of the catheters*] within the images being *used as* the *features* on which *to base motion correction*. Support for the amendments to claim 18 can be found in the specification at least on page 2, lines 13-21 and 24-25; page 3, lines 1, 5 and 30-31; page 8, lines 4-6 and 10; page 9, lines 24-25; and FIG. 1 (steps 1-8).

Applicant submits that neither **Strommer**, **Shaknovich**, **Hofland** nor **Kundu** discloses at least the aforementioned specific feature limitation of independent claim 18, as now more clearly presented herein. In particular, it is submitted that the primary

citation to **Strommer** does not disclose the claimed intervention device and computing unit. Accordingly, without conceding the propriety of the asserted combination, the asserted combination of **Strommer**, **Shaknovich**, **Hofland** and **Kundu** is likewise deficient, even in view of the knowledge of one of ordinary skill in the art.

The primary citation to **Strommer** relates to a method and system for registering a first image associated with a first coordinate system with a second image in a second coordinate system. The method uses first and second medical positioning systems and a registering module coupled with a second imager and with the second medical positioning system. The first medical positioning system is associated with a first imager. (see Strommer, Abstract, FIGs. 2A-2D, paragraph [0083]).

The Office Action contends that the **Strommer** "discloses a system and method for controlling an interventional procedure in an organ of a patient (see abstract) comprising: (i)an intervention device comprising detectable markers positioned within the target organ, (ii) a displaceable catheter for performing an intervention of the interventional procedure, and (iii) a stereotactic navigation system to position the detectable markers and displaceable catheter within the target organ (see para 83); an imaging unit arranged to acquire images of the target organ along with the detectable markers and the displaceable catheter (see paras 96-102); a computing unit configured to carry out the steps calculating a motion-corrected organ-oriented three-dimensional coordinate system based on the images (see paras 96-102); generating a spatial roadmap representing an envisaged trajectory of the displaceable catheter within the coordinate system by interrelating the spatial positions of the detectable markers with interactive user input to alter or redraw the roadmap (see paras 96-102), monitoring the spatial position of the displaceable catheter; determining a discrepancy between the spatial position of the displaceable catheter and the roadmap and calculating a navigational correction (see paras 43 and 96-102); and controlling the navigation system to apply the navigational correction to the position of the displaceable catheter

(see paras 96-102); and a user interface arranged to display images of the target organ, the spatial position of the detectable markers, the displaceable catheter, and the roadmap (see paras 96-102); and a control screen displaying the correction to be applied to the navigation system and accepting interactive user input for the correction (see paras 96-102)." (Office Action, pages 3-4). This contention is respectfully traversed.

The **Strommer** reference expressly teaches "[e]ach of a first organ timing monitor 228 and a second organ timing monitor 238 is a device for monitoring the pulse rate of an inspected organ" (see Strommer, paragraph [0084]). The **Strommer** reference further expressly teaches "**[**f]irst MPS **[***medical positioning system*] 226 determines the position and orientation of organ timing sensor 260 in a [*first*] coordinate system ... according to a signal received from organ timing sensor 260" and "reconstructs a plurality of three-dimensional images ... according to the position and orientation of organ timing sensor 260" (see Strommer, paragraphs [0087]-[0088]). The **Strommer** reference still further expressly teaches "[s]econd MPS [*medical positioning system*] 236 determines the position and orientation of organ timing sensor 260 in a [*second*] coordinate system ... according to a signal received from organ timing sensor 260" and "provides a signal respective of **[***a*] determined position and orientation of the distal end of medical intervention device 280 to registering module 232" (see Strommer, paragraphs [0091]). The **Strommer** reference yet still further expressly teaches "[r]egistering module 232 retrieves a three-dimensional image 320 ... from image database 230" and "registers three-dimensional image 320, which was *acquired in coordinate system* I, with a second image 318, which was *acquired in coordinate system* II" (*emphasis added*, see Strommer, paragraphs [0096]-[0102], more particularly, [0100]). Thus, **Stommer** cannot reasonably be interpreted to disclose the aforementioned specific feature limitations of independent claim 18.

The secondary citation to **Shaknovich** relates to a shuttle stent delivery catheter and is cited for its alleged disclosure of a plurality of detectable markers per catheter (Office Action, page 4). Applicant submits that **Shaknovich** does not add anything that would remedy the aforementioned deficiency in **Strommer**.

The tertiary citation to **Hofland** relates to a method and device for magnetic resonance imaging and is cited for its alleged disclosure of using supplementary information (Office Action, page 5). Applicant submits that **Hofland** does not add anything that would remedy the aforementioned deficiency in **Strommer** or **Shaknovich**.

The fourth citation to **Kundu** relates to knowledge-based ECG interpretation and is cited for its alleged disclosure of an ECG system that measures temporal electrical activity of the heart (Office Action, page 5). Applicant submits that **Kundu** does not add anything that would remedy the aforementioned deficiency in **Strommer**, **Shaknovich**, or **Hofland**.

Accordingly, favorable reconsideration and withdrawal of the rejection of independent claim 18 under 35 U.S.C. §103(a) are respectfully requested. Claims 19-26 depend from and further limit independent claim 18 and therefore are allowable as well. Accordingly, the 35 U.S.C. §103(a) rejection thereof has now been overcome.

Claim 27 contains limitations similar to those of claim 18. Accordingly, for similar reasons as stated with respect to overcoming the rejection of claim 18, claim 27 is believed allowable and an early formal notice thereof is requested. Claims 28-35 depend from and further limit independent claim 27 and therefore are allowable as well. The 35 U.S.C. §103(a) rejection thereof has now been overcome. Withdrawal of the rejection is respectfully requested.

Conclusion

Except as indicated herein, the claims were not amended in order to address issues of patentability and Applicants respectfully reserve all rights they may have under the Doctrine of Equivalents. Applicants furthermore reserve their right to reintroduce subject matter deleted herein at a later time during the prosecution of this application or a continuation application. In addition, the Office Action contains a number of statements characterizing the claims, specification, and the prior art. Regardless of whether such statements are addressed by Applicant, Applicant refuses to subscribe to any of these statements, unless expressly indicated by Applicant.

The matters identified in the Office Action of December 5, 2011 are now believed resolved. The amendments herein are fully supported by the original specification and drawings; therefore, no new matter is introduced. Issuance of an early formal notice of allowance of claims 18-35 is requested.

Respectfully submitted,

By: /Michael J. Balconi-Lamica/

Michael J. Balconi-Lamica
Registration No. 34,291
for Charles E. Kosinski, Reg. No. 39,254

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Mail all correspondence to:
Charles E. Kosinski, Esq.
Philips Intellectual Property & Standards
P.O. Box 3001
Briarcliff Manor, New York 10510-8001, USA
Telephone: (724) 387-3746
email: charles.kosinski@philips.com
Facsimile: 914-332-0615

a-32658.623